

IN THE CLAIMS:

Please amend the claims where indicated below:

b) 1. *(currently amended)* A vertical cavity surface emitting laser (VCSEL),
comprising:

an active region further comprising at least one quantum well having a ~~well~~ depth of at least 40 meV, wherein said depth is defined as the difference between a valence band offset and a conduction band offset, said quantum well being comprised of InGaAsSb and barrier layers sandwiching said at least one quantum well; and
confinement layers sandwiching said active region.

2. *(original)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsN.

3. *(original)* The VCSEL of claim 1 wherein said barrier layers are comprised of GaAsP.

4. *(original)* The VCSEL of claim 1 wherein said barrier layers are comprised of AlGaAs.

5. *(original)* The VCSEL of claim 1 wherein said confinement layers are comprised of AlGaAs.

6. *(original)* The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

b1
7. *(original)* The VCSEL of claim 2 wherein said confinement layers are comprised of AlGaAs.

8. *(original)* The VCSEL of claim 7 wherein said quantum well is up to and including 50Å in thickness.

9. *(original)* The VCSEL of claim 3 wherein said confinement layers are comprised of AlGaAs.

10. *(original)* The VCSEL of claim 9 wherein said quantum well is up to and including 50Å in thickness.

11. *(original)* The VCSEL of claim 4 wherein said confinement layers are comprised of AlGaAs.

12. *(original)* The VCSEL of claim 11 wherein said quantum well is up to and including 50Å in thickness.

13. *(Not amended)* The VCSEL of claim 1 wherein said at least one quantum well further comprises >1% N.

14. *(original)* The VCSEL of claim 13 wherein said quantum well is up to and including 50Å in thickness.

15. *(original)* The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsN.

16. *(original)* The VCSEL of claim 15 wherein said quantum well is up to and including 50Å in thickness.

b) 17. *(original)* The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsP

18. *(original)* The VCSEL of claim 17 wherein said quantum well is up to and including 50Å in thickness.

19. *(original)* The VCSEL of claim 13 wherein said barrier layers are comprised of AlGaAs.

20. *(original)* The VCSEL of claim 19 wherein said quantum well is up to and including 50Å in thickness.

21. *(original)* The VCSEL of claim 13 wherein said confinement layers are comprised of AlGaAs.

22. *(original)* The VCSEL of claim 21 wherein said quantum well is up to and including 50Å in thickness.

23. *(original)* The VCSEL of claim 15 wherein said confinement layers are comprised of AlGaAs.

24. *(original)* The VCSEL of claim 23 wherein said quantum well is up to and including 50Å in thickness.

25. *(Not amended)* The VCSEL of claim 17 wherein said confinement layers are comprised of AlGaAs.

26. *(original)* The VCSEL of claim 25 wherein said quantum well is up to and including 50Å in thickness.

27. *(original)* The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

28. *(original)* The VCSEL of claim 27 wherein said quantum well is up to and including 50Å in thickness.

45. *(currently amended)* A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum comprised of material including InGaAsSb and greater than 1% nitrogen, said at least one quantum well having a well-depth of at least 40 meV, wherein said depth is defined as the difference between a valence band offset and a conduction band offset, and barrier layers sandwiching said at least one quantum well; and

confinement layers sandwiching said active region.

46. *(previously added)* The VCSEL of claim 45 wherein said barrier layers are comprised of GaAsN.

47. *(previously added)* The VCSEL of claim 45 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

48. *(previously added)* The VCSEL of claim 45 wherein said confinement layers are comprised of AlGaAs.

49. *(previously added)* The VCSEL of claim 46 wherein said confinement layers are comprised of AlGaAs.

50. *(previously added)* The VCSEL of claim 47 wherein said confinement layers are comprised of AlGaAs.

51. *(previously added)* The VCSEL of claim 48 wherein said barrier layers are comprised of GaAsN.

52. *(previously added)* The VCSEL of claim 48 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

53. *(currently amended)* A vertical cavity surface emitting laser (VCSEL), comprising:

an active region further comprising at least one quantum comprised of material including InGaAsSb and greater than 1% nitrogen, said at least one quantum well having a well-depth of at least 40 meV, wherein said depth is defined as the difference between a valence band offset and a conduction band offset, said quantum well including and a thickness up to and including 50Å, and barrier layers sandwiching said at least one quantum well; and

confinement layers sandwiching said active region.

54. *(previously added)* The VCSEL of claim 53 wherein said barrier layers are comprised of GaAsN.

p1
55. *(previously added)* The VCSEL of claim 53 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

56. *(previously added)* The VCSEL of claim 53 wherein said confinement layers are comprised of AlGaAs.

57. *(previously added)* The VCSEL of claim 54 wherein said confinement layers are comprised of AlGaAs.

58. *(previously added)* The VCSEL of claim 55 wherein said confinement layers are comprised of AlGaAs.

59. *(previously added)* The VCSEL of claim 56 wherein said barrier layers are comprised of GaAs and at least one of N, P and Al.
